FACT SHEET

as required by LAC 33:IX.3109, for draft **Louisiana Pollutant Discharge Elimination System Permit Number LA0064092, Agency Interest Number AI 19227, and Permit Activity Number PER20040001** to discharge to waters of the **State of Louisiana** as per LAC 33:IX.2311.

The **permitting authority** for the Louisiana Pollutant Discharge Elimination System (LPDES) is:

Louisiana Department of Environmental Quality
Office of Environmental Services
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

I. THE APPLICANT IS: **St. John the Baptist Parish**
Woodland Wastewater Treatment Plant
1801 West Airline Highway
LaPlace, Louisiana 70068

II. PREPARED BY: Todd Franklin
Environmental Scientist 3

DATE PREPARED: March 8, 2006

III. PERMIT ACTION: reissue LPDES permit LA0064092, AI 19227, PER20040001

LPDES application received: December 6, 2004

LPDES permit issued: February 1, 2000
LPDES permit expires: March 31, 2005
LDEQ has enforcement authority

IV. FACILITY INFORMATION:

A. The application is for the discharge of treated sanitary wastewater from a publicly owned treatment works serving the northeast St. John the Baptist Parish residential areas.

B. The LPDES permit application does not indicate the receipt of industrial wastewater. However, in a letter dated June 15, 2005, St. John the Baptist Parish certified that there are currently no permitted non-domestic users discharging to the Woodland WWTP; however, wastewater officials have determined that the wastewater discharge from Saybolt has the potential to contain pollutants. In order to ensure that the discharge from this facility is analyzed on a regular basis, the Parish is in the process of adding this facility to the non-domestic user list and regulating Saybolt as a non-domestic discharger via a permit as per Local Ordinance Number 93-17.

Industry Name	Type of Industry
Saybolt	*Laboratory; inspection and testing services for a wide variety of products* (including mineral oil products, petrochemicals, industrial chemicals, agricultural products) with an emphasis on petroleum and petrochemical sectors

C. The facility is located at 900 Woodland Drive in LaPlace, St. John the Baptist Parish.

D. The treatment facility consists of grit removal with chemical injection for metals settling, then activated sludge aeration followed by clarification and settling. Clarified water goes through sand filtration with pre-chlorination and chlorine contact. Dechlorination is by sulfur dioxide.

E. Front Gate Location: Latitude 30° 05' 41" North
Longitude 90° 28' 19" West

Outfall 001

Discharge Location: Latitude 30° 05' 46" North
Longitude 90° 28' 15" West

Description: treated sanitary wastewater

Design Capacity: 3.3 MGD

Type of Flow Measurement, which the facility is currently using:

Horizontal Weir as primary with Totalizing/Continuous flow meter/recorder

Outfall 002

Discharge Location: Latitude 30° 05' 47" North
Longitude 90° 28' 19" West

Description: east storm water runoff ditch

Outfall 003

Discharge Location: Latitude 30° 05' 48" North
Longitude 90° 28' 22" West

Description: west storm water runoff ditch

V. RECEIVING WATERS:

The discharge is into Vicknair Canal in segment 040602 of the Lake Pontchartrain Basin. This segment is listed on the *2004 303(d) List of Impaired Waterbodies*.

The **critical low flow** (7Q10) of the Vicknair Canal is 0 cfs.

The **hardness value** is 14.5 mg/l and the **fifteenth percentile value for TSS** is 118 mg/l.

The designated uses and degree of support for Segment 040602 of the Lake Pontchartrain Basin are as indicated in the table below[1/]:

Overall Degree of Support for Segment	Degree of Support of Each Use						
	Primary Contact Recreation	Secondary Contact Recreation	Propagation of Fish & Wildlife	Outstanding Natural Resource Water	Drinking Water Supply	Shell fish Propagation	Agriculture
Partially Supported	Insufficient Data	Fully Supported	Not Supported	N/A	N/A	N/A	N/A

[1/]The designated uses and degree of support for Segment 040602 of the Lake Pontchartrain Basin are as indicated in LAC 33:IX.1123.C.3, Table (3) and the 2004 Water Quality Management Plan, Water Quality Inventory Integrated Report, Appendix A, respectively.

VI. ENDANGERED SPECIES:

The receiving waterbody, **Subsegment 040602** of the Lake Pontchartrain Basin, **has been identified by the United States Fish and Wildlife Service (FWLS) as habitat for the *Gulf sturgeon*, which is listed federally as an endangered/threatened species**. LDEQ, as instructed by the FWLS in the letter dated October 21, 2005, from Watson (DWF) to Gautreaux (LDEQ), has sent a copy of this fact sheet to the FWLS for review and consultation.

VII. HISTORIC SITES:

The discharge is from an existing facility location, which does not include an expansion beyond the existing perimeter. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the 'Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits' no consultation with the Louisiana State Historic Preservation Officer is required.

VIII. PUBLIC NOTICE:

Upon publication of the public notice, **a public comment period shall begin on the date of publication and last for at least 30 days thereafter**. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the statement of basis. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation

Office of Environmental Services Public Notice Mailing List

For additional information, contact:

Mr. Todd Franklin
Permits Division
Department of Environmental Quality
Office of Environmental Services
P. O. Box 4313
Baton Rouge, Louisiana 70821-4313

IX. PROPOSED PERMIT CONDITIONS:

Subsegment 040602, Lake Maurepas (Estuarine), is listed on *LDEQ's Final 204 303(d) List* as impaired for non-native aquatic plants and total fecal coliform. To date no TMDL's have been completed for this waterbody. A reopener clause will be established in the permit to allow for the requirement of more stringent effluent limitations and requirements as imposed by a TMDL. Until completion of TMDL's for the Lake Pontchartrain Basin, those suspected causes for impairment which are not directly attributed to the municipal point source category have been eliminated in the formulation of effluent limitations and other requirements of this permit. Additionally, suspected causes of impairment which could be attributed to pollutants which were not determined to be discharged at a level which would cause, have the reasonable potential to cause or contribute to an excursion above any present state water quality standard were also eliminated.

Total Fecal Coliform

Monitoring for fecal coliform colonies is the best indicator for the potential presence of pathogenic organisms in wastewater. To protect against the development of pathogenic organisms in the receiving waterbodies, fecal coliform limits have been established in the permit.

FINAL EFFLUENT LIMITATIONS:

As per LAC 33:IX.2707.L.2.a.ii, availability of information which was not available at the time of permit issuance and would have justified the application of less stringent effluent limitations constitutes an exception to LAC 33.IX.2707.L.1 which states when a permit is renewed or reissued standards or conditions must be at least as stringent as the final limitations, standards, or conditions in the previous permit. The previous LPDES permit contained water quality based limits for Total Lead, Total Copper, Total Cadmium, Total Mercury, Bromodichloromethane, Dibromochloromethane, Total Cyanide, and Chloroform.

In a previous LPDES permit, issued December 30, 1993, the Parish was ordered to conduct a study to determine the source of Total Lead, Total Copper, Total Cadmium, and Total Mercury. The study, submitted to the Department in July of 1995, concluded that possible sources of metals were (1) natural sources and (2) illegal discharges to the collection system. This study was summarized in the following paragraph:

> A review of Safe Drinking Water Act limits indicates that humans can withstand higher metal limits than aquatic life. The Parish obtains its potable water supply from the Mississippi River. It is possible concentrations of metals may be present in the water supply below drinking water standards, but higher than wastewater discharge limits. Metals may also be present in soils carried to the treatment system during periods of inflow and infiltration. An illegal discharge of high metal concentration by residential, or more so residential-industrial users, was also sited as a possible source of metal contamination. A review of possible industries or like trades were explored to illustrate the type of industry which will yield the metal pollutants found in the Woodland Wastewater Treatment System's effluent. Although, the Woodland Wastewater Treatment Plant does not have any industrial users, certain types of industry may be present on a smaller scale in a residential home. Industries common to all four metals were porcelain, paint, and photographic supplies.

The Woodland Wastewater Treatment Plant has had no effluent violations for metals, Total Lead, Total Copper, Total Cadmium, or Total Mercury from February 2000 through October 2004. In addition, the effluent analysis submitted with the application does not indicate the presence of these metals. Geometric means for each of these metals were found using the DMR data from February 2000 through October 2004:

Total Lead = e((ln 0.034 + ln 0.036 + ln 0.036 + ln 0 + ln 0.038 + ln 0.03 + ln 0 + ln 0.035)/8)
= 0.0347µg/l

Total Copper = e((ln 0.046 + ln 0.092 + ln 0.1 + ln 0.1 + ln 0.1 + ln 0.07 + ln 0.089 + ln 0.11)/8)
= 0.0857 µg/l

Total Cadmium = e((ln 0.004 + ln 0.009 + ln 0.01 + ln 0.01 + ln 0.01 + ln 0.01 = ln 0 + ln 0.008)/8)
= 0.0084 µg/l

Total Mercury = e((ln 0 + ln 0 + ln 0 + ln 0 + ln 0 + ln 0 + ln 0 + ln 0)/8)
= 0 µg/l

The resultant geometric means were evaluated in a water quality screen, which indicated that there is no need for a water quality-based limit. Also, with the exception of Total Copper, the remaining metals are not listed on the 303(d) List as a suspected cause of impairment. Total Copper was delisted on the 2002 303(d) List. However, the Department would like to continue to monitor these priority pollutants for an additional permit cycle, but at a reduced monitoring frequency of once/year (1/year). As a result, **the water quality-based effluent limitation requirements for Total Lead, Total Copper, Total Cadmium, and Total Mercury will remain in the permit**.

The previous permit required water quality based effluent limitations for Bromodichloromethane, Dibromochloromethane, Total Cyanide, and Chloroform as a result of a water quality screen. The geometric mean for each of these pollutants was analyzed.

There were four (4) effluent limitation violations for Bromodichloromethane reported on the DMRs submitted by the Parish from February 2000 through October 2004. The DMRs were evaluated and the geometric mean was calculated and evaluated in a water quality spreadsheet, which indicated that a water quality based effluent limitation is not needed. According to the United States Environmental Protection Agency (USEPA) and the Agency for Toxic Substances and Disease Registry, Bromodichloromethane (a Trihalomethane (THM)) is formed as a by-product when chlorine is added to water as a disinfection to kill pathogens. In water, bromodichloromethane will evaporate to the air and/or be broken down slowly by bacteria. It does not build up in the food chain. The most likely way for humans to be exposed is by drinking contaminated chlorinated water, breathing vapors released from chlorinated water in swimming pools or in the home, or it may enter the body directly through the skin when bathing or swimming. EPA has set the Maximum Contaminated Level at 0.1 parts per million (0.1 mg/l) for drinking water and recommends that levels in lakes and streams be limited to 0.19 parts per million (0.19 mg/l) to prevent possible health effects from drinking water or eating fish contaminated with this chemical. The monthly average permit effluent limitation requirement is 0.09 lb/day (3.3 µg/l). The four (4) effluent limitation violations were 0.1 lbs/day (3.6 µg/l), 0.12 lbs/day (4.36 µg/l), 0.22 lbs/day (7.99 µg/ll), and 0.19 (6.9 µg/l).

Information obtained in a telephone conversation on May 25, 2005, with Mr. Mike Curtis, Curtis Environmental Services, Inc., indicates that the Parish had started pre-chlorinating (before the filter) as well as after. Since these four violations, the Parish has stopped pre-chlorinating (before the filter), preventing the reaction with solids resulting in higher bromodichloromethanes in the effluent. Since this practice has been halted, the sampling has indicated no violations. According to Mr. Curtis, the most recent DMR for February 2005 – April 2005 reports a monthly average of 0.07 lbs/day, below the required effluent limitation of 0.09 lbs/day.

Dibromochloromethane and Chloroform are also trihalomethanes (THMs) that are also formed as by-products when chlorine is added to the water as a disinfection to kill pathogens. There were no permit effluent limitation violations for these pollutants reported on DMRs submitted by the Parish from February 2000 through October 2004. The DMRs were evaluated and the geometric means were calculated and evaluated in a water quality spreadsheet, which indicated that a water quality based effluent limitation is not needed. Since these pollutants and bromodichloromethane are by-products of the use of chlorine and the Parish has just recently changed the application method of chlorine, the **water quality based effluent limitation requirements for dibromochloromethane, chloroform, and bromodichloromethane will remain in the permit** at a reduced monitoring frequency of once per six months (1/6 months).

According to the DMRs submitted by the Parish from February 2000 through October 2004, there have been two (2) permit effluent limitation violations for Total Cyanide in 2003. The DMRs were evaluated and the geometric mean was calculated and evaluated in a water quality spreadsheet, which indicated that a water quality based effluent limitation is not needed. According to the Parish in a response to Compliance Order WE-C-03-0859, dated February 11, 2004, no cause for the excursion could be found. In the event of future excursions, the Parish plans to conduct multiple sampling events on the Plants effluent whenever cyanide levels increase above the detection limits. No excursions have occurred since the excursions in 2003. The Parish now attributes these excursions to lab testing variations. However, the **water quality based effluent limitation requirement for cyanide will remain in the permit** at a reduced monitoring frequency of once per six months (1/6 months).

OUTFALL 001 – treated sanitary wastewater discharged into Vicknair Canal

DESIGN CAPACITY IS 3.3 MGD

FINAL EFFLUENT LIMITATIONS shall **BEGIN** on the effective date of the permit and **EXPIRE** on the expiration date of the permit.

Effluent Characteristic	Monthly Average (lbs/day)	Monthly Average	Weekly Average	Basis
Biological Oxygen Demand (BOD_5)	275	10 mg/l	15 mg/l	Biological Oxygen Demand (BOD_5) effluent limitations are set in accordance with the *Statewide Sanitary Effluent Limitations Policy* (SSELP) for facilities of this treatment type and size.
***Total Suspended* Solids (TSS)**	413	15 mg/l	23 mg/l	Total Suspended Solids (TSS) effluent limitations Limits are set using Best Professional Judgment (BPJ) for facilities of this type and size.

PRIORITY POLLUTANTS

Effluent Characteristics	Monthly Average (lbs/day)	Daily Maximum (lbs/day)	Basis
Total Lead	0.09	0.20	Total Lead water quality-based effluent limitation *was a required in the previous permit. It is* through Best Professional Judgment (BPJ) that monitoring be continued for an additional permit cycle at a reduced monitoring frequency of 1/year. See Final Effluent Limitations on page 5 and Appendix B-1 for additional information.
Total Copper	0.26	0.63	Total Copper water quality-based effluent limitation was a required in the previous permit. It is through Best Professional Judgment (BPJ) that monitoring be continued for an additional permit cycle at a reduced monitoring frequency of 1/year. See Final Effluent Limitations on page 5 and Appendix B-1 for additional information.
Total Cadmium	0.02	0.05	Total Cadmium water quality-based effluent limitation was a required in the previous permit. It is through Best Professional Judgment (BPJ) that monitoring be continued for an additional permit cycle at a reduced monitoring frequency of 1/year. See Final Effluent Limitations on page 5 and Appendix B-1 for additional information.

Effluent Characteristics	Monthly Average (lbs/day)	Daily Maximum (lbs/day)	Basis
Total Mercury	0.0006	0.0014	Total Mercury water quality-based effluent limitation was a required in the previous permit. It is through Best Professional Judgment (BPJ) that monitoring be continued for an additional permit cycle at a reduced monitoring frequency of 1/year. See Final Effluent Limitations on page 5 and Appendix B-1 for additional information.
Dibromochloromethane	0.14	0.33	Dibromochloromethane water quality-based effluent limitation was required in the previous permit. It is through Best Professional Judgment (BPJ) that monitoring be continued at a reduced monitoring frequency of 1/6 months. See Final Effluent Limitations on page 5 and Appendix B-1 for additional information.
Chloroform	1.93	4.59	Chloroform water quality-based effluent limitation was required in the previous permit. It is through Best Professional Judgment (BPJ) that monitoring be continued at a reduced monitoring frequency of 1/6 months. See Final Effluent Limitations on page 5 and Appendix B-1 for additional information.
Bromodichloromethane	0.09	0.22	Bromodichloromethane water quality-based effluent limitation was required in the previous permit. It is through Best Professional Judgment (BPJ) that monitoring be continued at a reduced monitoring frequency of 1/6 months. See Final Effluent Limitations on page 5 and Appendix B-1 for additional information.
Cyanide	0.10	0.24	Cyanide water quality-based effluent limitation was required in the previous permit. It is through Best Professional Judgment (BPJ) that monitoring be continued at a reduced monitoring frequency of 1/6 months. See Final Effluent Limitations on page 5 and Appendix B-1 for additional information.

OTHER EFFLUENT LIMITATIONS:

1) Fecal Coliform

The discharge from this facility is into a water body, which has a designated use of Primary Contact Recreation. According to LAC 33:IX.1113.C.5.b.i, the fecal coliform standards for this water body are 200/100 ml and 400/100 ml. Therefore, **the limits of 200/100 ml (Monthly Average) and 400/100 ml (Weekly Average) are proposed as Fecal Coliform limits in the permit**. These limits are being proposed through Best Professional Judgment in order to ensure that the water body standards are not exceeded, and due to the fact that existing facilities have demonstrated an ability to comply with these

limitations using present available technology.

2) **pH**

According to LAC 33:IX.2469.A.1., POTW's must treat to at least secondary levels. Therefore, in accordance with LAC 33:IX.2645.C., **the pH shall not be less than 6.0 standard units nor greater than 9.0 standard units at any time**.

3) ***Solids and Foam***

There shall be no discharge of floating solids or visible foam in other than trace amounts in accordance with LAC 33:IX.1113.B.7.

4) **Total Residual Chlorine**

If chlorination is used to achieve the limitations on Fecal Coliform Bacteria, **the effluent shall contain NO MEASURABLE Total Residual Chlorine (TRC) after disinfection and prior to disposal**. Given the current constraints pertaining to chlorine analytical methods, NO MEASURABLE will be defined as less than 0.1 mg/l of chlorine. The **TRC shall be monitored 2/month by grab sample**.

OUTFALL 002 – east storm water runoff into Vicknair Canal

FINAL EFFLUENT LIMITATIONS shall **BEGIN** on the effective date of the permit and **EXPIRE** on the expiration date of the permit.

Effluent Characteristic	Monthly Average (lbs/day)	Monthly Average	Weekly Average	Basis
Total Organic Carbon (TOC)	N/A	N/A	50 mg/l	Total Organic Carbon (TOC) effluent limitations are set based on storm water provisions for storm water discharges.
Oil & Grease	N/A	N/A	15 mg/l	*Oil & Grease effluent limitations are set* based on storm water provisions for storm water discharges.

pH

According to LAC 33:IX.3705.A.1., POTW's must treat to at least secondary levels. Therefore, in accordance with LAC 33:IX.5905.C, **the pH shall not be less than 6.0 standard units nor greater than 9.0 standard units at any time**.

OUTFALL 003 – West storm water runoff

FINAL EFFLUENT LIMITATIONS shall **BEGIN** on the effective date of the permit and **EXPIRE** on the expiration date of the permit.

Effluent Characteristic	Monthly Average (lbs/day)	Monthly Average	Weekly Average	Basis
Total Organic Carbon (TOC)	N/A	N/A	50 mg/l	Total Organic Carbon (TOC) effluent limitations are set based on storm water provisions for storm water discharges.
Oil & Grease	N/A	N/A	15 mg/l	Oil & Grease effluent limitations are set based on storm water provisions for storm water discharges.

pH

According to LAC 33:IX.3705.A.1., POTW's must treat to at least secondary levels. Therefore, in accordance with LAC 33:IX.5905.C, **the pH shall not be less than 6.0 standard units nor greater than 9.0 standard units at any time**.

TOXICITY CHARACTERISTICS:

In accordance with EPA's Region 6 Post-Third Round Toxics Strategy, permits issued to treatment works treating domestic wastewater with a flow (design or expected) greater than or equal to 1 MGD shall require biomonitoring at some frequency for the life of the permit or where available data show reasonable potential to cause lethality, the permit shall require a whole effluent toxicity (WET) limit (*Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards*, September 27, 2001 VERSION 4).

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates the effects of synergism of the effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. LAC 33:IX.1121.B.3. provides for the use of biomonitoring to monitor the effluent for protection of State waters. The biomonitoring procedures stipulated as a condition of this permit are as follows:

The permittee shall submit the results of any biomonitoring testings performed in accordance with the LPDES Permit No. LA0064092, Biomonitoring Section for the organisms indicated below.

Biomonitoring Testing	Frequency
Chronic static renewal 7-day survival & reproduction test using *Ceriodaphnia dubia* (Method 1002.0)	1/quarter[1]
Chronic static renewal 7-day survival & growth test using fathead minnow (*Pimephales promelas*) (Method 1000.0)	1/quarter[1]

Dilution Series - The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional concentrations shall be 32%, 42%, 56%, 75%, and 100%. The low-flow effluent concentration (critical low-flow dilution) is defined as 100% effluent. The critical dilution is calculated in Appendix B-1 of this fact sheet. Results of all dilutions shall be documented in a full report according to the test method publication mentioned in the Biomonitoring Section under Whole Effluent Toxicity. This full report shall be submitted to the Office of Environmental Compliance as contained in the Reporting Paragraph located in the Biomonitoring Section of the permit.

The permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.2903. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

This recommendation is in accordance with the LDEQ/OES *Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards,* EPA Region 6 Post-Third Round Whole Effluent Toxicity Testing Frequencies (Revised June 30, 2000), and the Best Professional Judgment of the reviewers (Melissa Reboul & Kim Gunderson).

[1] *If there are no lethal or sub-lethal effects demonstrated after the first year of quarterly testing, the* permittee may certify fulfillment of the WET testing requirements in writing to the prmitting authority. If granted, themonitoring frequency for the test species may be reduced to not less than once per year for the less sensitive species (usually *Pimephales promelas*) and not less than twice per year for the more sensitive species (usually *Ceriodaphnia dubia*). Upon expiration of the permit, the monitoring frequency for this species shall revert to once per quarter until the permit is reissued.

X. PREVIOUS PERMITS:

LPDES Permit No. : LA0064092 Effective: February 1, 2000 Expires: January 31, 2005

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Daily Average	Weekly Max (Daily Max)	Measurement Frequency	Sample Type
Flow	REPORT	REPORT	Continuous	Recorder
Biological Oxygen Demand (BOD_5)	10 mg/l	15 mg/l	1/week	6 Hour Composite
Total Suspended Solids (TSS)	15 mg/l	23 mg/l	2/month	6 Hour Composite
Total Residual Chlorine (TRC)	N/A	NO MEASURABLE	2/month	Grab
Fecal Coliform Colonies	200	400	2/month	Grab
pH	6.0 s.u.	9.0 s.u.	2/month	Grab
Cadmium	0.08 lbs/day	(0.19 lbs/day)	1/6 months	24 Hour Composite
Copper	0.53 lbs/day	(1.26 lbs/day)	1/6 months	24 Hour Composite
Lead	0.12 lbs/day	(0.29 lbs/day)	1/6 months	24 Hour Composite
Mercury	0.0007 lbs/day	(0.0018 lbs/day)	1/6 months	24 Hour Composite
Bromodichloromethane	0.09 lbs/day	(0.22 lbs/day)	1/quarter	24 Hour Composite
Dibromochloromethane	0.14 lbs/day	(0.33 lbs/day)	1/quarter	24 Hour Composite
Cyanide	0.1 lbs/day	(0.24 lbs/day)	1/quarter	24 Hour Composite
Chloroform	1.9 lbs/day	(4.5 lbs/day)	1/quarter	24 Hour Composite
Biomonitoring				
Ceriodaphnia dubia	REPORT	REPORT	1/6 months	24 Hour Composite
Pimephales promelas	REPORT	REPORT	1/year	24 Hour Composite

XI. ENFORCEMENT AND SURVEILLANCE ACTIONS:

A) Inspections

A review of the files indicates the following inspections were performed during the period beginning January 1, 2002 and ending March 31, 2005 for this facility.

Date – November 16, 2004
Inspector – Dionne Ordoyne – Office of Environmental Compliance, Surveillance Division, Southeast Regional Office

Findings and/or Violations -

1. Physical site inspection was satisfactory.

2. Flow meter is a Milltronics OCM III...reading at the time of inspection was 0.941 MGD...calibrated 9/30/04.
3. The pH is collected, monitored, and analyzed on site...records on site.
4. Sludge is sent to BFI Landfill in Sorrento.
5. Chronic Bioassay Tests on site (9/04 and 3/04).
6. MWPP is currently being completed by CES, Inc.
7. Lab analysis reports were reviewed. COC's on site.
8. DMRs were reviewed...no excursions during the period of time since the last inspection.

B) Compliance and/or Administrative Orders

A review of the files indicates that the following enforcement actions have been administered against this facility from January 1, 2002 through March 31, 2005:

Date – January 25, 2004
COMPLIANCE ORDER
Enforcement Tracking No.: **WE-C-03-0859**
FINDINGS:

1. Respondent owns and operates a POTW...Woodland Treatment Plant located on Woodland Drive, 2 miles north of LaPlace...issued LPDES Permit LA0064092 effective February 1, 2000...expiration date of January31, 2005...LPDES Permit authorizes...discharge...into Vicknair Canal...waters of the state.
2. File review...November 13, 2003...failure to sample and/or monitor...for Bromodichloromethance, Dibromochloromethane, Cyanide, and Chloroform for the 3rd quarter of 2001 and the 1st and 3rd quarters of 2002...violation of LPDES Permit LA0064092.
3. Further file review...November 13, 2003...permit excursions as reported by the Respondent on DMRs:

Date	Parameter	Permit Limit	Sample Results
8/01 – 1/02	Total Cadmium (Monthly Average)	0.08 lbs/day	11.983 lbs/day
	Total Cadmium (Daily Maximum)	0.19 lbs/day	21.313 lbs/day
	Total Copper (Monthly Average)	0.53 lbs/day	98.521 lbs/day
	Total Copper (Daily Maximum)	1.26 lbs/day	106.566 lbs/day
	Total Lead (Monthly Average)	0.13 lbs/day	39.408 lbs/day
	Total Lead (Daily Maximum)	0.29 lbs/day	42.626 lbs/day
	Total Mercury (Monthly Average)	0.0007 lbs/day	1.604276 lbs/day
	Total Mercury (Daily Maximum)	0.0018 lbs/day	2.131313 lbs/day
2/03 – 4/03	Total Cyanide (Monthly Average)	0.10 lbs/day	0.21 lbs/day
5/03 – 7/03	Total Cyanide (Monthly Average)	0.10 lbs/day	0.12 lbs/day

Each effluent excursion is in violation of LPDES permit LA0064092.

ORDER:

1. Immediately take...any and all steps necessary to meet and maintain compliance with LPDES permit LA0109576.
2. If deficiencies are not physically possible within 30 days...submit a complete written report including a detailed description of the circumstances of the cited violations, and the action to achieve compliance with this Compliance Order.
3. Submit...written report that includes a detailed description of the circumstances surrounding the cited violations and actions taken or to be taken to achieve compliance with the Order.

Date – February 11, 2004
RESPONSE TO COMPLIANCE ORDER
Enforcement Tracking No.: **WE-C-03-0859**

1. St. John did sample and provide data for the 3rd quarter of 2001 (reporting period 8/1/01 thru 10/31/01)...DMRs were submitted to the Department.

2. St. John provided a written response on 8/13/02 for the 1st quarter DMR mistake...the Parish sampled for the 1st quarter THM data during the last few days of the previous quarter...permit does not follow normal "calendar" quarters...plant operator sampled during the last part of January 2002 thinking the samples were for the 1st quarter...this mistake was not noticed until DMRs were completed by the Parish...this explanation with provided to LDEQ in August 2002...sample collected was reported on the previous quarter DMR and it shows two samples collected with an explanation.
3. Parish did not sample for the 3rd quarter of 2002...plant was in an upset condition and the operator did not collect the sample prior to expiration of the permit quarter...Parish did submit a DMR with this information to LDEQ...the "non-calendar" quarter reporting requirement has caused confusion since several plants follow normal quarters and only two follow non-calendar quarters...environmental coordinator has been instructed to request all calendar quarter reporting period on all future LPDES permits...this should correct this problem in the future.
4. The Parish has already addressed the 1st eight LPDES permit excursions in a letter the LDEQ on 5/15/2002...there were no excursions...computer calculation error...a "corrected" DMR was submitted.
5. Last two excursions were addressed with LDEQ...two Total Cyanide Average excursions were slightly above the LPDES permit limit...since this was the first time the Woodland effluent exhibited a Cyanide level above the detection limit the Parish did not conduct an investigation into the incident...no cause for the excursion could be found...the Parish has not seen a Cyanide excursion since this time...the Parish has decided to conduct multiple sampling events on the Plant effluent whenever Cyanide level increases above detection limits...this plan of action has not been required since the incident has not occurred since the 1st and 2nd quarters of 2003...the increases were slightly above the detection limit and the Parish is now attributing the minor increase to lab testing variations.

Date – February 21, 2005
AMENDED COMPLIANCE ORDER
Enforcement Tracking No.: **WE-C-03-0859A**
FINDINGS:

1. The Department...amends Paragraph I...The Respondent submitted a permit renewal application...November 10, 2004...Under the terms and conditions of LPDES Permit LA0064092, the Respondent is authorized to discharge treated sanitary wastewater from its facility into Vicknair Canal...waters of the state.
2. The Department...amends Paragraph III...Further file review...November 13, 2003 and January 19, 2005, revealed the following permit excursions as reported by the Respondent on DMRs:

Date	Parameter	Permit Limit	Sample Results
8/01 – 1/02	Total Cadmium (Monthly Average)	0.08 lbs/day	11.983 lbs/day
	Total Cadmium (Daily Maximum)	0.19 lbs/day	21.313 lbs/day
	Total Copper (Monthly Average)	0.53 lbs/day	98.521 lbs/day
	Total Copper (Daily Maximum)	1.26 lbs/day	106.566 lbs/day
	Total Lead (Monthly Average)	0.13 lbs/day	39.408 lbs/day
	Total Lead (Daily Maximum)	0.29 lbs/day	42.626 lbs/day
	Total Mercury (Monthly Average)	0.0007 lbs/day	1.604276 lbs/day
	Total Mercury (Daily Maximum)	0.0018 lbs/day	2.131313 lbs/day
2/03 – 4/03	Total Cyanide (Monthly Average)	0.10 lbs/day	0.21 lbs/day
5/03 – 7/03	Total Cyanide (Monthly Average)	0.10 lbs/day	0.12 lbs/day
11/03 – 1/04	Bromodichloromethane (Monthly Avg.)	0.09 lbs/day	0.10 lbs/day
2/04 – 4/04	Bromodichloromethane (Monthly Avg.)	0.09 lbs/day	0.12 lbs/day
5/04 – 7/04	Bromodichloromethane (Monthly Avg.)	0.09 lbs/day	0.22 lbs/day
8/04 – 10/04	Bromodichloromethane (Monthly Avg.)	0.09 lbs/day	0.19 lbs/day

Each excursion...constitutes a violation of LPDES Permit LA0064092.

3. The Department incorporates all of the remainder of the original Compliance Order, Tracking Number WE-C-03-0859 and AI 19227.

C) DMR Review

A review of the discharge monitoring reports for the period beginning January 1, 2002 through December 31, 2004 has revealed the following effluent violations.

Date	Parameter	Permit Limit	Sample Results
2/03 – 4/03	Total Cyanide (Monthly Average)	0.10 lbs/day	0.21 lbs/day
5/03 – 7/03	Total Cyanide (Monthly Average)	0.10 lbs/day	0.12 lbs/day
11/03 – 1/04	Bromodichloromethane (Monthly Avg.)	0.09 lbs/day	0.10 lbs/day
2/04 – 4/04	Bromodichloromethane (Monthly Avg.)	0.09 lbs/day	0.12 lbs/day
5/04 – 7/04	Bromodichloromethane (Monthly Avg.)	0.09 lbs/day	0.22 lbs/day
8/04 – 10/04	Bromodichloromethane (Monthly Avg.)	0.09 lbs/day	0.19 lbs/day

XII. ADDITIONAL INFORMATION:

Please be aware that the Department will be conducting a TMDL in the Lake Pontchartrain Basin is scheduled for completion in 2011. The Department of Environmental Quality reserves the right to impose more stringent discharge limitations and/or additional restrictions as a result of the TMDL. These studies may indicate the need for advanced wastewater treatment. Studies of similar dischargers and receiving water bodies have resulted in monthly average effluent limitations of 5 mg/l $CBOD_5$, and 2 mg/l NH_3-N. Therefore, prior to upgrading or expanding this facility, the permittee should contact the Department to determine the status of the work being done to establish future effluent limitations and additional permit conditions.

Final effluent loadings (i.e. lbs/day) have been established based upon the permit limit concentrations and the design capacity of 3.3 MGD.

Effluent loadings are calculated using the following example:

$CBOD_5$: 8.34 gal/lb x 3.3 MGD x 10 mg/l = 275.22 lb/day

The Monitoring Requirements, Sample Types, and Frequency of Sampling as indicated in the permit are standard for facilities of flows between 1 MGD and 5.00 MGD.

Outfall 001, *treated sanitary effluent discharged into Vicknair Canal (design capacity 3.3 MGD):*

EFFLUENT CHARACTERISTICS	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow	Continuous	Recorder
Biological Oxygen Demand (BOD_5)	1/week[1]	6 Hr. Composite
Total Suspended Solids (TSS)	2/month[1]	6 Hr. Composite
Total Residual Chlorine (TRC)	2/month[1]	Grab
Fecal Coliform Bacteria	2/month[1]	Grab
pH	2/month[1]	Grab
[1] Measurement frequencies were reduced in the previously issued permit. These reductions will remain due to continued compliance with permit effluent limitations (February 2000 through November 2004).		
PRIORITY POLLUTANTS		
Cadmium	1/year	24 Hr. Composite
Copper	1/year	24 Hr. Composite
Lead	1/year	24 Hr. Composite

Mercury	1/year	24 Hr. Composite
Bromodichloromethane	1/6 months	24 Hr. Composite
Dibromochloromethane	1/6 months	24 Hr. Composite
Cyanide	1/6 months	24 Hr. Composite
Chloroform	1/6 months	24 Hr. Composite
BIOMONITORING		
***Ceriodaphnia dubia* (Method 1002.0)**	1/quarter	24 Hr. Composite
***Pimephales promelas* (Method 1000.0)**	1/quarter	24 Hr. Composite

Outfall 002, east storm water runoff into Vicknair Canal:

EFFLUENT CHARACTERISTICS	Monitoring Requirements	
	Measurement Frequency[1]	Sample Type
Flow	1/week	Measure
Total Organic Carbon (TOC)	1/quarter	Grab
Oil & Grease	1/quarter	Grab
pH	1/quarter	Grab

[1] when discharging

Outfall 003 west storm water runoff into Vicknair Canal:

EFFLUENT CHARACTERISTICS	Monitoring Requirements	
	Measurement Frequency[1]	Sample Type
Flow	1/week	Measure
Total Organic Carbon (TOC)	1/quarter	Grab
Oil & Grease	1/quarter	Grab
pH	1/quarter	Grab

[1] when discharging

Pretreatment Requirements

It is recommended that LDEQ Option 1 Pretreatment Language be included in LPDES Permit LA0064092. This recommendation is in accordance with 40 CFR Part 403 regulations, the General Pretreatment Regulations for Existing and New Sources of Pollution contained in LAC Title 33, Part IX, Subpart T and the Best Professional Judgment (BPJ) of the reviewer, Melissa Reboul, June 16, 2005.

Pollution Prevention Requirements

The permittee shall institute or continue programs directed towards pollution prevention. The permittee shall institute or continue programs to improve the operating efficiency and extend the useful life of the facility. The permittee will complete an annual Environmental Audit Report **each year** for the life of this permit according to the schedule below. The permittee will accomplish this requirement by completing an Environmental Audit Form which has been attached to the permit. All other requirements of the Municipal Wastewater Pollution Prevention Program are contained in Part II of the permit.

The audit evaluation period is as follows:

Audit Period Begins	Audit Period Ends	Audit Report Completion Date
Effective Date of Permit	12 Months from Audit Period Beginning Date	3 Months from Audit Period Ending Date

XIII. TENTATIVE DETERMINATION:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to reissue a permit for the discharge described in this Statement of Basis.

XIV. REFERENCES:

Louisiana Water Quality Management Plan, Vol. 10, "Wasteload Allocations and Discharger Inventory", Louisiana Department of Environmental Quality, 1992.

Louisiana Water Quality Management Plan, Vol. 5-B, "Water Quality Inventory", Louisiana Department of Environmental Quality, 1998.

Louisiana Administrative Code, Title 33 - Environmental Quality, Part IX - Water Quality Regulations, Chapter 11 - "Louisiana Surface Water Quality Standards", Louisiana Department of Environmental Quality, 1999.

Louisiana Administrative Code, Title 33 - Environmental Quality, Part IX - Water Quality Regulations, Chapter 23 - "The LPDES Program", Louisiana Department of Environmental Quality, 1999.

Low-Flow Characteristics of Louisiana Streams, Water Resources Technical Report No. 22, United States Department of the Interior, Geological Survey, 1980.

Index to Surface Water Data in Louisiana, Water Resources Basic Records Report No. 17, United States Department of the Interior, Geological Survey, 1989.

Louisiana Pollutant Discharge Elimination System (LPDES) Permit Application to Discharge Wastewater, St. John the Baptist Parish, Woodland Wastewater Treatment Plant, December 6, 2004.

APPENDIX I

APPENDIX I

Numeric Toxic Limits: LDEQ has reviewed and evaluated the effluent analyses submitted by the permittee on December 6, 2004 and DMRs submitted between February 2000 through November 2004, and examined the following pollutants that are regulated by LAC 33:IX.1113.C.6., in accordance with the implementation procedures outlined under the *Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards*, October 30, 1995. Please see Appendix B-1, Water Quality Screen Spreadsheet.

Pollutant	Ce[1]	Ce x 2.13[2]	Water Quality Based Limit[3]	Drinking Water Source	Permit Limit?
Total Arsenic	15	31.95	281.4035	No	No
Total Cadmium	0.0084	0.017892	0.8080686	No	No
Total Copper	0.0857	0.182541	9.6138737	No	No
Total Lead	0.0347	0.073911	3.1061652	No	No
Total Mercury	0	0	0.0207214	No	No
Total Cyanide	0.0606	0.129078	3.61036	No	No
Bromodichloromethane	0.1136	0.241968	3.3	No	No
Chloroform	0.2403	0.511839	70	No	No
Dibromochloromethane	0.044	0.09372	5.08	No	No
Selenium	7	14.91	---	No	No
4 chloro 3 methyl phenol	20	42.6	---	No	No

1. Metals and/or pollutant concentration result were presented as total metals and/or pollutants in lab analysis submitted by the permittee. *All pollutants calculated in µg/l.*
2. For the reported effluent concentrations (Ce) it is estimated that 95% of the concentrations of chemicals taken over time will be 2.13 times the Ce or less.
3. The water quality based limit is the maximum allowable instream concentration for that pollutant to be in compliance with water quality standards. For metals, the Louisiana Water Quality Criteria for metals are hardness dependent, and expressed as dissolved metals. The water quality based limit is calculated with a conversion for metals limits expressed as total metals.

The following steps were used in evaluating the potential toxicity of the analyzed pollutants (see Appendix B-1):

i. An evaluation of the applicability of the effluent data.
Results of the PPS were entered and compared to EPA's Minimum Quantification Levels (MQL's) to determine the potential presence of the respective toxic pollutant. Those pollutants with reported laboratory Method Detection Levels (MDL's), which exceed their respective EPA MQL's are determined to be reasonably present in the effluent and an evaluation of their potential toxicity is determined. Those pollutants with MDLs less than the MQL are determined to be not potentially present in the effluent and eliminated from further evaluation.

ii. Calculation of permit limits based on applicable water quality standards.
Applicable water quality criteria are listed in the Appendix B-1 in Columns 12-14. These values were used to calculate the Waste Load Allocations (WLA's) for each of the toxic pollutants. The WLA is the maximum allowable concentration of a pollutant necessary to meet the respective water quality criteria. The WLAs are calculated as described in the State's Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, dated October 30, 1995, as follows (**Copper** is used as the example pollutant for the following calculations):

Complete Mix Balance Model for Waste Load Allocation

Qe	=	plant effluent, MGD = **3.3 MGD**
Qr	=	critical flow of receiving stream, **0 cfs**
Fs	=	MZ, ZID flow fraction, LAC 33:IX.1115.D.7 and 8 (**MZ = 1, and ZID = 0.1**)
Cr	=	numerical criteria value from LAC 33:IX.1113, Table 1
Cu	=	ambient instream concentration for pollutant. In the absence of accurate supporting data, assume Cu = 0
WLA	=	concentration for pollutant at end-of-pipe based on aquatic life and human health numerical criteria (site specific dilution type)
LTA	=	long term average, units same as WLA
WQBL	=	*effluent water quality based limit.*

Dilution factor $= \dfrac{Qe}{(QrFs + Qe)}$

Dilution factor (acute) $= \dfrac{3.3}{(0)(0.6463)(0.1) + 3.3} = 1$

Dilution factor (chronic) $= \dfrac{3.3}{(0)(0.6463)(1) + 3.3} = 1$

WLA = (Cr/Dilution factor) - (FsQrCu/Qe)

iii. Conversion of dissolved metals criteria for aquatic life to total metals.

Metals criteria for aquatic life protection are based on dissolved metals concentrations and hardness values averaged from data compilations contained in the Louisiana Water Quality Data Summary. A dissolved to total metal conversion will be implemented. Hardness and TSS are a function of the conversion. This involves determining a linear partition coefficient for the metal of concern and using this to determine the fraction of metal dissolved, so that the dissolved metal ambient criteria may be translated to a total effluent limit. The average hardness value used for the analysis is **25 mg/l CaCO3** (USGS data). The 15th percentile TSS value is **118 mg/l**. The formula for converting dissolved metals to total metals for streams and lakes are provided below.

K_p	=	Linear partition coefficient
K_{po}	=	found in Table A below
$\propto$	=	found in Table A below
TSS	=	total suspended solids concentration found in receiving stream or approximation thereof (nearest most representative site), lowest 15th percentile, units in mg/l
C_D/C_T	=	Fraction of metal dissolved
Cr	=	Dissolved criteria value for metal in water quality standards

$$K_p = K_{po} \times TSS^{\propto}$$
$$K_p = (1.04 \times 10^6) \times 118.^{(-0.74)}$$
$$= 30467.76898$$

$$\text{then, } \frac{C_D}{C_T} = \frac{1}{1 + (K_P)(TSS)(10^{-6})}$$

$$\frac{C_D}{C_T} = \frac{1}{1 + (30467.76898)(118)(10^{-6})}$$

$$= 0.217618538$$

therefore,

$$\textbf{Total Metal} = \frac{Cr}{(C_D/C_T)} = \textbf{4.5951967}$$

TABLE A

LINEAR PARTITION COEFFICIENTS
FOR PRIORITY METALS IN STREAMS AND LAKES
(Delos et.al, 1984) (*1)

METAL	STREAMS		LAKES	
	K_{po}		K_{po}	
Arsenic	0.48×10^6	-0.73	0.48×10^6	-0.73
Cadmium	4.00×10^6	-1.13	3.52×10^6	-0.92
Chromium III (*2)	3.36×10^6	-0.93	2.17×10^6	-0.27
Copper	1.04×10^6	-0.74	2.85×10^6	-0.9
Lead	2.80×10^6	-0.8	2.04×10^6	-0.53
Mercury	2.90×10^6	-1.14	1.97×10^6	-1.17
Nickel	0.49×10^6	-0.57	2.21×10^6	-0.76
Zinc	1.25×10^6	-0.7	3.34×10^6	-0.68

(*1) Delos, C. G., W. L. Richardson, J. V. DePinto, R. B. Ambrose, P. W. Rogers, K. Rygwelski, J. P. St. John, W. J. Shaughnessey, T. A. Faha, W. N. Christie. *Technical Guidance for performing Waste Load Allocations, Book II: Streams and Rivers.* Chapter 3: Toxic Substances, for the U. S. Environmental Protection Agency. (EPA-440/4-84-022).

(*2) Linear partition coefficients shall not apply to the Chromium VI numerical criterion. The approved analytical method for Chromium VI measures only the dissolved form. Therefore, permit limits for Chromium VI shall be expressed in the dissolved form. See 40 CFR § 122.45(c)(3).

WLA a,c,h = (Cr/Dilution factor) - (FsQrCu/Qe) Cu = 0

WLA_{acute} = (22.93385902/1) = 22.93385902 µg/l

$WLA_{chronic}$ = (17.26564982/1) = 17.26564982 µg/l

iv. Calculation of Long Term Averages (LTA's) and Permit Limits.

Comparison of the reported effluent data (converted to the 95th percentile) to the calculated effluent limitations. Long term averages are listed in the Appendix B-1 in Columns 15-17.

Long term averages are calculated for each WLA (based on aquatic and human health criteria). The LTA's are calculated as follows:

$LTA_a = WLA_a \times 0.32$
$LTA_c = WLA_c \times 0.53$

LTA_{acute} = 22.93385902 x 0.32 = 7.338834886 µg/l

$LTA_{chronic}$ = 17.26564982 x 0.53 = 9.150794405 µg/l

A comparison of each LTA is made and the lowest (most restrictive) is selected to calculate the effluent limitations. The most limiting LTA is listed in Appendix B-1, Column 18.

Calculation of permit limits if aquatic life LTA is more limiting:

Monthly Average = Min(LTA_a, LTA_c) x 1.31
Daily Maximum = Min(LTA_a, LTA_c) x 3.11

Monthly Average = 7.338834886 x 1.31 = 9.613873701 µg/l
Daily Maximum = 7.338834886 x 3.11 = 22.8237765 µg/l

The resulting allowable effluent concentration is converted to a mass value using the following formula:

Monthly Average (lbs/day) = (0.009613873701 mg/l) x 8.34 x 3.3 MGD = 0.264593012 lbs/day
Daily Maximum (lbs/day) = (0.0228237765 mg/l) x 8.34 x 3.3 MGD = 0.628155963 lbs/day

Comparison of the reported effluent data (converted to 95th percentile) is made to the calculated effluent limitations. Water Quality Based limits are listed in Appendix B-1, Columns 19-22.

In accordance with the State of Louisiana's implementation procedures, the reported effluent concentration is compared to the calculated daily average concentration. If the effluent concentration is greater than the calculated daily average concentration, then a reasonable potential exists and an effluent limitation for the pollutant of concern is imposed in the permit. (Please refer to Appendix B-1 for the calculated daily average concentration listed in Column 19 and the effluent concentration listed in Column 3.)

The discharge is considered to pose a reasonable potential to cause a water quality excursion if the estimated 95th percentile of a pollutant in the effluent will result in an instream waste concentration, which is above the applicable State water quality criterion. The 95th percentile of possible effluent concentrations are estimated as follows:

$$C_{95} = C_{mean} * \exp (1.645 * \sigma - 0.5 * \sigma^2)$$

where: 1.645 = normal distribution factor at 95th percentile

$$\sigma^2 = \ln(CV^2 + 1)$$

if CV is assumed = 0.6,

$$\sigma^2 = .307$$

The ratio of the estimated 95th percentile value to the mean (C_{95}/C_{mean}) is calculated:

$$C_{95}/C_{mean} = 2.13$$

Based upon review of the permittee's effluent data, there are no pollutants present or potentially present in the effluent discharge in such concentrations, which would cause an exceedance of Louisiana's Water Quality Standards.

APPENDIX B-1

Water Quality Screen

LA0064092

Water Quality Screen for St. John the Baptist Parish/Woodland WWTP

Input variables:

Receiving Water Characteristics:

Receiving Water Name=	**Vicknair Canal**
Critical flow (Qr) cfs=	**0.1**
Harm. mean/avg tidal cfs=	
Drinking Water=1 HHNPCR=2	
Marine, 1=y, 0=n	
Rec. Water Hardness=	**25**
Rec. Water TSS=	**118**
Fisch/Specific=1,Stream=0	
Diffuser Ratio=	

Effluent Characteristics:

Permittee=	**St. John the Baptist Parish/Woodland WWTP**
Permit Number=	**LA0064092**
Facility flow (Qef),MGD=	**3.3**
Outfall Number =	1
Eff. data, 2=lbs/day	
MQL, 2=lbs/day	
Effluent Hardness=	N/A
Effluent TSS=	N/A
WQBL ind. 0=y, 1=n	
Acute/Chr. ratio 0=n, 1=y	
Aquatic,acute only1=y,0=n	

Page Numbering/Labeling

Appendix	Appendix B-1
Page Numbers 1=y, 0=n	1
Input Page # 1=y, 0=n	1

Fischer/Site Specific inputs:

Pipe=1,Canal=2,Specific=3	
Pipe width, feet	
ZID plume dist., feet	
MZ plume dist., feet	
HHnc plume dist., feet	
HHc plume dist., feet	

Fischer/site specific dilutions:

D Dilution =	---
F/specific MZ Dilution =	---
F/specific HHnc Dilution=	---
F/specific HHc Dilution=	---

Dilution:

ZID Fs =	0.1
MZ Fs =	1
Critical Qr (MGD)=	0.06463
Harm. Mean (MGD)=	0.06463
ZID Dilution =	0.9980453
MZ Dilution =	0.9807914
HHnc Dilution=	0.9807914
HHc Dilution=	0.9807914
ZID Upstream =	0.0019585
MZ Upstream =	0.0195848
MZhhnc Upstream=	0.0195848
MZhhc Upstream=	0.0195848
ZID Hardness=	---
MZ Hardness=	---
ZID TSS=	---
MZ TSS=	---

Multipliers:

WLAa --> LTAa	0.32
WLAc --> LTAc	0.53
LTA a,c-->WQBL avg	1.31
LTA a,c-->WQBL max	3.11
LTA h --> WQBL max	2.38
WQBL-limit/report	2.13
WLA Fraction	1
WQBL Fraction	1

Conversions:

ug/L-->lbs/day Qef	0.027522
ug/L-->lbs/day Qeo	0
ug/L-->lbs/day Qr	0.000834
lbs/day-->ug/L Qeo	36.334569
lbs/day-->ug/L Qef	36.334569
diss-->tot 1=y0=n	1
Cu diss->tot1=y0=n	1
cfs-->MGD	0.6463

Receiving Stream:

Default Hardness=	25
Default TSS=	10
99 Crit., 1=y, 0=n	1

Toxicity Dilution Series:

Biomonitoring dilution:	0.9807914
Dilution Series Factor:	0.75

	Percent Effluent
Dilution No. 1	98.079%
Dilution No. 2	73.5594%
Dilution No. 3	55.1695%
Dilution No. 4	41.3771%
Dilution No. 5	31.0329%

Partition Coefficients; Dissolved-->Total

METALS	FW
Total Arsenic	2.7404012
Total Cadmium	3.1513711
Chromium III	5.6921406
Chromium VI	1
Total Copper	4.5951967
Total Lead	8.2700004
Total Mercury	2.4870806
Total Nickel	4.8115827
Total Zinc	6.229674

Aquatic Life, Dissolved Metal Criteria, ug/L

METALS	ACUTE	CHRONIC
Arsenic	339.8	147.9
Cadmium	7.0673855	0.3693189
Chromium III	176.31043	57.19328
Chromium VI	15.712	10.582
Copper	4.9908329	3.7573255
Lead	13.882173	0.5409683
Mercury	2.04	0.012
Nickel	438.06484	48.650614
Zinc	35.357406	32.286674

Site Specific Multiplier Values:

CV =	---
N =	---
WLAa --> LTAa	---
WLAc --> LTAc	---
LTA a,c-->WQBL avg	---
LTA a,c-->WQBL max	---
LTA h --> WQBL max	---

(*1) Toxic Parameters	(*2) Cu Instream Conc. ug/L	(*3) Effluent /Tech (Avg) ug/L	(*4) Effluent /Tech (Max) ug/L	(*5) MQL ug/L	(*6) Effluent 1=No 95% 0=95 %	(*7) 95th % estimate Non-Tech ug/L	(*8) Numerical Criteria Acute FW ug/L	(*9) Chronic FW ug/L	(*10) HHNDW ug/L	(*11) HH Carcinogen Indicator "C"
NONCONVENTIONAL										
Total Phenols (4AAP)				5			700	350	50	
3-Chlorophenol				10						
4-Chlorophenol				10			383	192		
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenocy-acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic		**15**		**10**	**0**	**31.95**	**931.18833**	**405.30534**		
Total Cadmium		**0.0084**		**1**	**0**	**0.017892**	**22.271954**	**1.1638609**		
Chromium III				10			1003.5837	325.55219		
Chromium VI				10			15.712	10.582		
Total Copper		**0.0857**		**10**	**0**	**0.182541**	**22.933859**	**17.26565**		
Total Lead		**0.0347**		**5**	**0**	**0.073911**	**114.80557**	**4.4738084**		
Total Mercury		**0**		**0.2**			**5.0736445**	**0.029845**		
Total Nickel				40			2107.7852	234.08645		
Total Zinc				20			220.26511	201.13545		
Total Cyanide		**0.0606**		**20**	**0**	**0.129078**	**22.36**	**5.2**	**12844**	
DIOXIN										
2,3,7,8 TCDD; dioxin				1.00E-05					7.20E-07	C
VOLATILE COMPOUNDS										
Benzene				10			2249	1125	12.5	C
Bromoform				10			2930	1465	34.7	C
Bromodichloromethane		**0.1136**		**10**	**0**	**0.241968**			**3.3**	**C**
Carbon Tetrachloride				10			2730	1365	1.2	C
Chloroform		**0.2403**		**10**	**0**	**0.511839**	**2890**	**1445**	**70**	**C**
Dibromochloromethane		**0.044**		**10**	**0**	**0.09372**			**5.08**	**C**
1,2-Dichloroethane(EDC)				10			11800	5900	6.8	C
1,1-Dichloroethylene				10			1160	580	0.58	C
1,3-Dichloropropylene				10			606	303	162.79	
Ethylbenzene				10			3200	1600	8100	
Methyl Chloride				50			55000	27500		
Methylene Chloride				20			19300	9650	87	C
1,1,2,2-Tetrachloro-ethane				10			932	466	1.8	C

(*1) Toxic Parameters	(*12) WLAa Acute	(*13) WLAc Chronic	(*14) WLAh HHNDW	(*15) LTAa Acute	(*16) LTAc Chronic	(*17) LTAh HHNDW	(*18) Limiting A,C,HH	(*19) WQBL Avg	(*20) WQBL Max	(*21) WQBL Avg	(*22) WQBL Max	(*23) Need VQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
NONCONVENTIONAL												
Total Phenols (4AAP)	701.37094	356.8547	50.979242	224.4387	189.13299	50.979242	50.979242	50.979242	121.3306	1.4030507	3.3392607	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	383.7501	195.76029	---	122.80003	103.75295	---	103.75295	135.91637	322.67169	3.7406903	8.8805702	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenocy-acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-*oxy) propionic acid* (2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	**933.01205**	**413.24318**	**---**	**298.56386**	**219.01889**	**---**	**219.01889**	**286.91474**	**681.14874**	**7.8964676**	**18.746576**	**no**
Total Cadmium	**22.315574**	**1.1866549**	**---**	**7.1409836**	**0.6289271**	**---**	**0.6289271**	**0.8238945**	**1.9559633**	**0.0226752**	**0.053832**	**no**
Chromium III	1005.5492	331.92808	---	321.77576	175.92188	---	175.92188	230.45767	547.11706	6.3426559	15.057756	no
Chromium VI	15.742772	10.789247	---	5.0376869	5.7183008	---	5.0376869	6.5993699	15.667206	0.1816279	0.4311929	no
Total Copper	**22.978775**	**17.603795**	**---**	**7.3532079**	**9.3300113**	**---**	**7.3532079**	**9.6327023**	**22.868477**	**0.2651112**	**0.6293862**	**no**
Total Lead	**115.03042**	**4.5614273**	**---**	**36.809734**	**2.4175564**	**---**	**2.4175564**	**3.1669989**	**7.5186006**	**0.0871621**	**0.2069269**	**no**
Total Mercury	**5.0835811**	**0.0304295**	**---**	**1.626746**	**0.0161276**	**---**	**0.0161276**	**0.0211272**	**0.0501569**	**0.0005815**	**0.0013804**	**no**
Total Nickel	2111.9133	238.671	---	675.81225	126.49563	---	126.49563	165.70928	393.40141	4.5606507	10.827194	no
Total Zinc	220.6965	205.07466	---	70.622879	108.68957	---	70.622879	92.515972	219.63716	2.5462246	6.0448538	no
Total Cyanide	**22.403792**	**5.3018412**	**13095.548**	**7.1692134**	**2.8099758**	**13095.548**	**2.8099758**	**3.6810684**	**8.7390249**	**0.1013104**	**0.2405154**	**no**
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	7.34E-07	---	---	7.34E-07	7.34E-07	7.34E-07	1.75E-06	2.02E-08	4.81E-08	no
VOLATILE COMPOUNDS												
Benzene	2253.4046	1147.033	12.744811	721.08948	607.92747	12.744811	12.744811	12.744811	30.332649	0.3507627	0.8348152	no
Bromoform	2935.7384	1493.6918	35.379594	939.43628	791.65666	35.379594	35.379594	35.379594	84.203434	0.9737172	2.3174469	no
Bromodichloromethane	**---**	**---**	**3.36463**	**---**	**---**	**3.36463**	**3.36463**	**3.36463**	**8.0078194**	**0.0926013**	**0.2203912**	**no**
Carbon Tetrachloride	2735.3467	1391.7333	1.2235018	875.31093	737.61866	1.2235018	1.2235018	1.2235018	2.9119343	0.0336732	0.0801423	no
Chloroform	**2895.66**	**1473.3001**	**71.370939**	**926.61121**	**780.84906**	**71.370939**	**71.370939**	**71.370939**	**169.86284**	**1.964271**	**4.674965**	**no**
Dibromochloromethane	**---**	**---**	**5.179491**	**---**	**---**	**5.179491**	**5.179491**	**5.179491**	**12.327189**	**0.14255**	**0.3392689**	**no**
1,2-Dichloroethane(EDC)	11823.11	6015.5506	6.933177	3783.3952	3188.2418	6.933177	6.933177	6.933177	16.500961	0.1908149	0.4541395	no
1,1-Dichloroethylene	1162.2718	591.35921	0.5913592	371.92699	313.42038	0.5913592	0.5913592	0.5913592	1.4074349	0.0162754	0.0387354	no
1,3-Dichloropropylene	607.18684	308.93421	165.97822	194.29979	163.73513	165.97822	163.73513	214.49302	509.21626	5.9032769	14.01465	no
Ethylbenzene	3206.2672	1631.3358	8258.6373	1026.0055	864.60795	8258.6373	864.60795	1132.6364	2688.9307	31.172419	74.004752	no
Methyl Chloride	55107.717	28038.583	---	17634.469	14860.449	---	14860.449	19467.188	46215.997	535.77596	1271.9567	no
Methylene Chloride	19337.799	9838.9938	88.703882	6188.0956	5214.6667	88.703882	88.703882	88.703882	211.11524	2.4413082	5.8103136	no
1,1,2,2-Tetrachloro-ethane	933.82531	475.12654	1.8352527	298.8241	251.81707	1.8352527	1.8352527	1.8352527	4.3679015	0.0505098	0.1202134	no

(*1) Toxic Parameters	(*2) Cu Instream Conc. ug/L	(*3) Effluent /Tech (Avg) ug/L	(*4) Effluent /Tech (Max) ug/L	(*5) MQL ug/L	(*6) Effluent 1=No 95% 0=95 %	(*7) 95th % estimate Non-Tech ug/L	(*8) Numerical Criteria Acute FW ug/L	(*9) Chronic FW ug/L	(*10) HHNDW ug/L	(*11) HH Carcinogen Indicator "C"
VOLATILE COMPOUNDS (cont'd)										
Tetrachloroethylene				10			1290	645	2.5	C
Toluene				10			1270	635	46200	
1,1,1-Trichloroethane				10			5280	2640		
1,1,2-Trichloroethane				10			1800	900	6.9	C
Trichloroethylene				10			3900	1950	21	C
Vinyl Chloride				10					35.8	C
ACID COMPOUNDS										
2-Chlorophenol				10			258	129	126.4	
2,4-Dichlorophenol				10			202	101	232.6	
BASE NEUTRAL COMPOUNDS										
Benzidine				50			250	125	0.00017	Benzidine
Hexachlorobenzene				10					0.00025	C
Hexachlorabutadiene				10			5.1	1.02	0.11	C
PESTICIDES										
Aldrin				0.05			3		0.0004	C
Hexachlorocyclohexane (gamma BHC, Lindane)				0.05			0.9515	0.21	0.2	C
Chlordane				0.2			2.4	0.0043	0.00019	C
4,4'-DDT				0.1			1.1	0.001	0.00019	C
4,4'-DDE				0.1			52.5	10.5	0.00019	C
4,4'-DDD				0.1			0.03	0.006	0.00027	C
Dieldrin				0.1			0.2374	0.0557	0.00005	C
Endosulfan				0.1			0.22	0.056	0.64	
Endrin				0.1			0.0864	0.0375	0.26	
Heptachlor				0.05			0.52	0.0038	0.00007	C
Toxaphene				5			0.73	0.0002	0.00024	C
Other Parameters:										
Fecal Colif. (col/100ml)										
Chlorine							19	11		
Ammonia										
Chlorides										
Sulfates										
Goldbook Values:										
Selenium		**7**		**5**	**0**	**14.91**				
four chloro three methyl phenol		**20**		**10**	**0**	**42.6**				

(*1) Toxic Parameters	(*12) WLAa Acute ug/L	(*13) WLAc Chronic ug/L	(*14) WLAh HHNDW ug/L	(*15) LTAa Acute ug/L	(*16) LTAc Chronic ug/L	(*17) LTAh HHNDW ug/L	(*18) Limiting A,C,HH ug/L	(*19) WQBL Avg ug/L	(*20) WQBL Max ug/L	(*21) WQBL Avg lbs/day	(*22) WQBL Max lbs/day	(*23) Need VQBL?
Tetrachloroethylene	1292.5264	657.63223	2.5489621	413.60846	348.54508	2.5489621	2.5489621	2.5489621	6.0665298	0.0701525	0.166963	no
Toluene	1272.4873	647.43638	47104.82	407.19593	343.14128	47104.82	343.14128	449.51508	1067.1694	12.371554	29.370636	no
1,1,1-Trichloroethane	5290.3408	2691.704	---	1692.9091	1426.6031	---	1426.6031	1868.8501	4436.7357	51.434492	122.10784	no
1,1,2-Trichloroethane	1803.5253	917.62636	7.0351355	577.12809	486.34197	7.0351355	7.0351355	7.0351355	16.743622	0.193621	0.460818	no
Trichloroethylene	3907.6381	1988.1905	21.411282	1250.4442	1053.7409	21.411282	21.411282	21.411282	50.958851	0.5892813	1.4024895	no
Vinyl Chloride	---	---	36.501138	---	---	36.501138	36.501138	36.501138	86.872707	1.0045843	2.3909107	no
ACID COMPOUNDS												
2-Chlorophenol	258.50529	131.52645	128.87552	82.721693	69.709016	128.87552	69.709016	91.318811	216.79504	2.5132763	5.9666331	no
2,4-Dichlorophenol	202.39561	102.97807	237.15544	64.766596	54.578377	237.15544	54.578377	71.497674	169.73875	1.967759	4.6715499	no
BASE NEUTRAL COMPOUNDS												
	250.48962	127.44811	0.0001733	80.156679	67.547496	0.0001733	0.0001733	0.0001733	0.0004125	4.77E-06	1.135E-05	no
Hexachlorobenzene	---	---	0.0002549	---	---	0.0002549	0.0002549	0.0002549	0.0006067	7.015E-06	1.67E-05	no
Hexachlorabutadiene	5.1099883	1.0399765	0.1121543	1.6351962	0.5511876	0.1121543	0.1121543	0.1121543	0.2669273	0.0030867	0.0073464	no
PESTICIDES												
Aldrin	3.0058755	---	0.0004078	0.9618801	---	0.0004078	0.0004078	0.0004078	0.0009706	1.122E-05	2.671E-05	no
Hexachlorocyclohexane (gamma BHC, Lindane)	0.9533635	0.2141128	0.203917	0.3050763	0.1134798	0.203917	0.1134798	0.1486585	0.3529222	0.0040914	0.0097131	no
Chlordane	2.4047004	0.0043842	0.0001937	0.7695041	0.0023236	0.0001937	0.0001937	0.0001937	0.0004611	5.332E-06	1.269E-05	no
4,4'-DDT	1.1021543	0.0010196	0.0001937	0.3526894	0.0005404	0.0001937	0.0001937	0.0001937	0.0004611	5.332E-06	1.269E-05	no
4,4'-DDE	52.60282	10.705641	0.0001937	16.832903	5.6739897	0.0001937	0.0001937	0.0001937	0.0004611	5.332E-06	1.269E-05	no
4,4'-DDD	0.0300588	0.0061175	0.0002753	0.0096188	0.0032423	0.0002753	0.0002753	0.0002753	0.0006552	7.576E-06	1.803E-05	no
Dieldrin	0.2378649	0.0567909	5.098E-05	0.0761168	0.0300992	5.098E-05	5.098E-05	5.098E-05	0.0001213	1.403E-06	3.339E-06	no
Endosulfan	0.2204309	0.0570968	0.6525343	0.0705379	0.0302613	0.6525343	0.0302613	0.0396423	0.0941126	0.001091	0.0025902	no
Endrin	0.0865692	0.0382344	0.2650921	0.0277021	0.0202642	0.2650921	0.0202642	0.0265462	0.0630218	0.0007306	0.0017345	no
Heptachlor	0.5210184	0.0038744	7.137E-05	0.1667259	0.0020534	7.137E-05	7.137E-05	7.137E-05	0.0001699	1.964E-06	4.675E-06	no
Toxaphene	0.7314297	0.0002039	0.0002447	0.2340575	0.0001081	0.0002447	0.0001081	0.0001416	0.0003361	3.897E-06	9.251E-06	no
Other Parameters:												
Fecal Colif. (col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	19.037211	11.215433	---	6.0919076	5.9441797	---	5.9441797	7.7868754	18.486399	0.2143104	0.5087827	no
Ammonia	---	---	---	---	---	---	---	---	---	---	---	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no
Goldbook Values:												
Selenium	---	---	---	---	---	---	---	---	---	---	---	**no**
four chloro three methyl phenc	---	---	---	---	---	---	---	---	---	---	---	**no**
	---	---	---	---	---	---	---	---	---	---	---	no

APPENDIX B-2

Documentation and Explanation of
Water Quality Screen and
Associated Lotus Spreadsheet

APPENDIX B-2
LA0064092/AI 19227/PER20040001

Documentation and Explanation of Water Quality Screen and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Vicknair Canal
Critical Flow, Qrc (cfs): 0 cfs
Harmonic Mean Flow, Qrh (cfs): cfs
Segment(s) No.: 040602
Receiving Stream Hardness: 14.5 mg/l
Receiving Stream TSS: 118 mg/l
MZ Stream Factor, Fs: 1 cfs
Plume distance, Pf: N/A

Effluent Characteristics:

Company: St. John the Baptist Parish/Woodland Wastewater Treatment Plant
Facility flow, Qe (MGD): 3.3 MGD
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0064092

Variable Definition:

Qrc, critical flow of receiving stream: 0 cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf =Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow, 3.3 MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams: $$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 \times Fs + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ \pi^{1/2}}{Pf}$$

$$\text{WLA} = \frac{(Cr-Cu)\ Pf}{(2.8)\ Pw\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$\text{WLA} = \frac{(Cr-Cu)\ Pf^{1/2}}{2.38\ Pw^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrc \times 0.6463 \times Cu)}{Qe}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{Qe}{(Qrh \times 0.6463 + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrh \times 0.6463 \times Cu)}{Qe}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ \pi^{1/2}}{Pf}$$

$$\text{WLA} = \frac{(Cr-Cu)\ Pf^{*}}{(2.8)\ Pw\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$\text{WLA} = \frac{(Cr-Cu)\ Pf^{1/2*}}{2.38\ Pw^{1/2}}$$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.
If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr-Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:
LTAa = WLAa X 0.32
LTAc = WLAc X 0.53
LTAh = WLAh

WQBL Calculations:

Select most limiting LTA to calculate daily max and daily avg WQBL

If aquatic life LTA is more limiting:

Daily Maximum = Min(LTAa, LTAc) X 3.11
Monthly Average = Min(LTAc, LTAc) X 1.31

If human health LTA is more limiting:

Daily Maximum = LTAh X 2.38
Monthly Average = LTAh

Mass Balance Formulas:

mass (lbs/day): (ug/L) X 1/1000 X (flow, MGD) X 8.34 = lbs/day

$$\text{concentration(ug/L)}: \frac{\text{lbs/day}}{\text{(flow, MGD) X 8.34 X 1/1000}} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

(*1) Parameter being screened.

(*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).

(*3) Monthly average effluent value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.

(*4) Daily maximum value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.

(*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If

this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

(*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.

(*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.

(*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations using the following formula: (Effluent Hardness X ZID Dilution + Receiving Stream Hardness X (1-ZID Dilution)). Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations using the following formula: (Effluent TSS X ZID Dilution + Receiving Stream TSS X (1-ZID Dilution)).

Hardness Dependent Criteria:

Metal	Formula
Cadmium	$e^{(1.1280[\ln(\text{hardness})] - 1.6774)}$
Chromium III	$e^{(0.8190[\ln(\text{hardness})] + 3.6880)}$
Copper	$e^{(0.9422[\ln(\text{hardness})] - 1.3884)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 1.4600)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 3.3612)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

Metal	Multiplier
Arsenic	$1 + 0.48 \times TSS^{-0.73} \times TSS$
Cadmium	$1 + 4.00 \times TSS^{-1.13} \times TSS$
Chromium III	$1 + 3.36 \times TSS^{-0.93} \times TSS$
Copper	$1 + 1.04 \times TSS^{-0.74} \times TSS$
Lead	$1 + 2.80 \times TSS^{-0.80} \times TSS$
Mercury	$1 + 2.90 \times TSS^{-1.14} \times TSS$
Nickel	$1 + 0.49 \times TSS^{-0.57} \times TSS$
Zinc	$1 + 1.25 \times TSS^{-0.70} \times TSS$

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

Metal	Multiplier
Copper	$1 + (10^{4.86} \times TSS^{-0.72} \times TSS) \times 10^{-6}$
Lead	$1 + (10^{6.06} \times TSS^{-0.85} \times TSS) \times 10^{-6}$
Zinc	$1 + (10^{5.36} \times TSS^{-0.52} \times TSS) \times 10^{-6}$

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

(*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations using the following formula: (Effluent Hardness X MZ Dilution + Receiving Stream Hardness X (1-MZ Dilution)). Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used,

however, a flow weighted TSS may be determined in site-specific situations using the following formula: (Effluent TSS X MZ Dilution + Receiving Stream TSS X (1-MZ Dilution)).

Hardness dependent criteria:

Metal	Formula
Cadmium	$e^{(0.7852[\ln(\text{hardness})] - 3.4900)}$
Chromium III	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$
Copper	$e^{(0.8545[\ln(\text{hardness})] - 1.3860)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 4.7050)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 1.1645)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

(*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primarry contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.

(*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.

(*12) Wasteload Allocation for acute aquatic criteria (WLAa). Dilution type WLAa is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L. Dilution WLAa formulas for streams:

$$WLAa = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAa formulas for static water bodies:

WLAa = (Cr-Cu)/Dilution Factor)
Cr represents aquatic acute numerical criteria from column (*8).
If Cu data is unavailable or inadequate, assume Cu=0

(*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L. Dilution WLAc formula:

$$WLAc = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:

WLAc = (Cr-Cu)/Dilution Factor)

Cr represents aquatic chronic numerical criteria from column (*9).
If Cu data is unavailable or inadequate, assume Cu=0

(*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula:

$$WLAh = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc,Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:

WLAh = (Cr-Cu)/Dilution Factor)

Cr represents human health numerical criteria from column (*10).

If Cu data is unavailable or inadequate, assume Cu=0

(*15) Long Term Average for aquatic numerical criteria (LTAa). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. WLAa X 0.32 = LTAa

(*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. WLAc X 0.53 = LTAc

(*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. WLAc X 1 = LTAh

(*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation.

(*19) End of pipe Water Quality Based Limit (WQBL) maximum 30-day monthly average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{\text{limiting aquatic}} \times 1.31 = WQBL_{\text{daily average}}$). If human health criteria was the most limiting criteria then LTAh = $WQBL_{\text{daily average}}$.

(*20) End of pipe Water Quality Based Limit (WQBL) 30-day daily maximum in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 3.11 = $WQBL_{daily\ max}$). If human health criteria was the most limiting criteria then LTAh is multiplied by 2.38 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 2.38 = $WQBL_{daily\ max}$).

(*21) End of pipe Water Quality Based Limit (WQBL) maximum 30-day monthly average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. Daily average WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily average WQBL, lbs/day.

(*22) End of pipe Water Quality Based Limit (WQBL) 30 day daily maximum in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. Daily maximum WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily maximum WQBL, lbs/day.

(*23) Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.